FINANCIAL OPTIMISM AND ENTREPRENEURIAL SATISFACTION

CHRIS DAWSON[1]

[1]School of Management, University of Bath, Claverton Down, Bath BA2 7AY, United Kingdom. Email: c.g.dawson@bath.ac.uk

Keywords: Optimism; economics; self-employment; entrepreneurship; job satisfaction

Research summary: *Adding to the literature that optimists are attracted to entrepreneurship, this paper finds that prior financial optimism has detrimental consequences for entrepreneurial pay satisfaction. Optimists overestimate the likelihood of positive events and will therefore tend to overestimate their prospects in entrepreneurship. It follows that conditional on realized entrepreneurial performance; optimist's subsequent pay satisfaction is lower through disappointment. These findings are consistent with theories of self-discrepancy from social psychology. Evidence is also provided that optimism reduces employee pay satisfaction, but since self-employment widens the scope for prospects to be exaggerated, the effects are stronger in self-employment. Whilst selection on optimism implies that entry into entrepreneurship is likely to be excessive, optimism by reducing entrepreneurial pay satisfaction may increase entrepreneurial exits.*

Managerial summary: *This paper examines how prior financial optimism affects entrepreneurial pay satisfaction. Optimists have a generalized tendency to overestimate the likelihood of positive events and will therefore tend to overestimate their prospects in self-employment. The results suggest that prior financial optimism reduces entrepreneurial pay satisfaction through disappointment. The same is true for employee pay satisfaction, but since entrepreneurship is typically a more uncertain and turbulent environment, making prospects harder to evaluate, the effects are found to be stronger in self-employment.*

INTRODUCTION

Why do people become self-employed? Evidence suggests that the self-employed earn less, have more role ambiguity and work substantially longer hours than their counterparts in paid-employment. In particular, Hamilton (2000) suggests that entrepreneurs have both lower initial earnings and lower earnings growth than employees. [1] Astebro *et al.* (2014) in reviewing the evidence on entrepreneurial returns, report that not only is it an activity with low median returns but with a very high variance, suggesting that most entrepreneurs perform poorly while a few are extremely successful. Moskowitz and Vissing-Jorgensen (2002) report that entrepreneurs invest, on average, 70 percent of their wealth in the business they run, whilst the return on their investment is equal to investing in a market tracking scheme. These findings suggest that a model of occupational choice based on the expected utility framework may not fully encapsulate the decision to become an entrepreneur, and that any non-pecuniary motivations for entry do not purely reflect leisure preferences. An alternative explanation for which there is accumulating evidence is that entrepreneurship attracts optimists (Arabsheibani *et al.*, 2000; Cassar, 2010; Dawson *et al*., 2014; Puri and Robinson, 2013). Optimists overestimate the likelihood of positive events and are attracted by activities that encourage optimism (de Meza and Southey, 1996). Entrepreneurship offers fertile conditions for optimism to thrive, since optimism tends to be highest under uncertainty, and when the chances of success are under the individual's control. Optimists will also tend to overestimate their prospects in paid-employment, but since entrepreneurship offers greater scope for optimistic thinking, optimists will be disproportionately attracted to self-employment, and as a consequence, entry is likely to be excessive (de Meza and Southey, 1996).

[1] It is important to note that whilst the self-employed are an incongruent group, self-employment status is commonly used to measure entrepreneurial status where researchers rely on secondary analysis of existing data. While recognising the limitations, 'self-employed' and 'entrepreneur' are used interchangeably throughout the discussion.

The self-selection of optimists into self-employment suggests that many entry decisions can be viewed as mistakes, made by boundedly rational decision makers and based upon misperceived prospects (Camerer and Lovallo, 1999). Those with a general tendency to overestimate the likelihood of positive outcomes may view the entrepreneurial returns distribution too favourably when assessing their own entrepreneurial project (Astebro *et al*., 2014). They may also overestimate their entrepreneurial ability and chances of entrepreneurial success with an overriding feeling that they can beat the odds (Camerer and Lovallo, 1999). If optimists overestimate their prospects in entrepreneurship then excessive entry is not the only adverse consequence. Overestimating entrepreneurial prospects implies actual realized returns will be lower than expected. The higher is optimism, the higher is the probability that the entrepreneur will suffer a discrepancy between actual performance and expected performance. Using self-discrepancy theory from social psychology (Higgins, 1987) it is argued that optimism, by increasing this performance disparity, will lead to lower levels of entrepreneurial satisfaction, especially satisfaction with pay. Not only is job satisfaction an important predictor of many aspects of labour market behaviour, it is an important predictor of overall well-being (Argyle, 2013), and as Georgellis, Sessions and Tsitsianis (2007) point out; satisfaction with pay is highly valued by the self-employed and is an important determinant of self-employment exits.

To investigate this proposition, this paper undertakes an empirical investigation using data from the British Household Panel Survey (BHPS) covering 1991 – 2008. Optimism is constructed as the miscalibration between a person's short-term financial expectations and their financial outcomes that follow. Importantly, optimism is measured for individuals whilst in paid-employment prior to entry into self-employment. This measure of financial optimism is related to the psychology literature concerning optimistic bias, where individuals overestimate the probability that a favourable outcome will occur, or underestimate that a

negative outcome will occur (Weinstein, 1980). Optimism bias is also closely related to the form of overconfidence which Moore and Healy (2008) categorize as overestimation, where there are miscalibrated beliefs in one's ability or performance. These measures of optimism are distinct from the dispositional optimism and positive psychology perspective. Here optimism is not viewed as a biased or miscalibrated perception about the probability of a future event occurring, but as a generalized outcome expectancy that good things will happen, usually operationalized with the life orientation test inventory (Scheier, Carver and Bridges, 1994). Prior work linking optimism to entrepreneurship has tended to focus on biased beliefs specific to the individual's entrepreneurial ability and chances of entrepreneurial success (Camerer and Lovallo, 1999; Landier and Thesmar, 2009). Financial optimism is complementary but distinct, and conforms to the definition used in economics where optimism is considered to be a more stable individual trait associated with generally positively biased expectations, not domain-specific to a specific project (Astebro *et al*., 2014). More formally, economists define optimism as an individual who generally 'revises up the probability of favourable events and revises down the probability of unfavourable events' (Hey, 1984). Dawson *et al*. (2015) corroborate that this measure of financial optimism captures a general bias, as it is highly correlated with other aspects of overly optimistic behaviour, such as smoking. The psychology here is that optimists tend to underestimate that negative events will occur, including outcomes such as illness and injury, which can lead to optimists forgoing precautionary interventions (Weinstein, 1980).

In line with the above predictions, the key finding of the paper is that the higher the financial optimism amongst entrants into self-employment, the lower is their level of subsequent self-employed pay satisfaction conditional on self-employed performance; prior performance in paid-employment; prior employee job satisfaction; and a range of other personal and demographic controls. A further area of interest is the extent to which optimism

matters more in self-employment than in paid-employment. Financial optimists are also likely to view their paid-employment prospects too favourably, but since self-employment offers fertile conditions for optimism to thrive, widening the scope for prospects to be exaggerated, the detrimental effects of optimism on pay satisfaction should be more noticeable in self-employment. The data also confirms this viewpoint.

BACKGROUND AND THEORETICAL DEVELOPMENT

Extant empirical research has sought to determine the underlying influences on individual job satisfaction, as job satisfaction is an important factor in the determination of many aspects of employee behaviour, including; productivity (Clark, 1996; Judge *et al*., 2001), quitting behaviour, and absenteeism (Akerlof *et al*., 1988; Clark, 2001; Clark, Georgellis and Sanfey, 1998; Griffeth, Hom and Gaertner, 2000; Patterson, Warr and West, 2004). Not only is job satisfaction a strong predictor of many important labour market behaviours, Argyle (2013) suggests job satisfaction is one of the primary predictors of overall well-being. Prior literature has also focused on the importance of job satisfaction for entrepreneurs, highlighting the role of pre-entrepreneurial job dissatisfaction as a predictor of entrepreneurial intent and transitions into self-employment (Brockhaus, 1980; Cromie and Hayes, 1991; Guerra and Patuelli, 2014; Schjoedt and Shaver, 2007), and current entrepreneurial job satisfaction—especially pay satisfaction—as a key determinant of firm survival (Georgellis *et al*., 2007). As Cooper and Artz (1995) point out, entrepreneurial satisfaction is a fundamental measure of success for the individual entrepreneur and is likely to influence future investment decisions. An interesting observation in the literature is that participation in self-employment generates higher job satisfaction than paid-employment (see Benz and Frey, 2004, 2008; Blanchflower, 2000; Blanchflower and Oswald, 1998). While self-employment may be associated with considerable stress (Blanchflower, 2004), lower pay (Carrington, Mccue and

Pierce, 1996; Hamilton, 2000) and longer working hours (Hyytinen and Ruuskanen, 2007; Merz, Böhm and Burgert, 2009), the self-employment job satisfaction advantage is thought to stem from compensating wage differentials, such as, autonomy, procedural utility, work flexibility and greater skill utilization (Benz and Frey, 2004, 2008; Douglas and Shepherd, 2002; Hundley, 2001; Kolvereid, 1996; Lange, 2012).

In this respect aspiring entrepreneurs may be driven to enter self-employment on the basis that they are willing to accept lower average returns in exchange for the many non-pecuniary benefits that self-employment is thought to generate. An alternative interpretation is that by creating a fertile environment for optimism to thrive, entrepreneurship entices the intrinsically optimistic (de Meza and Southey, 1996). Entrepreneurship can be seen as an attractive environment for optimists, since optimism tends to be highest when the chances of success are uncertain, when outcomes are under the individual's control, and when individuals have emotional commitment to the outcome (Kahneman, Slovic and Tversky, 1982; Mckenna, 1993; Taylor, 1989). As Astebro *et al*. (2014) note, the entrepreneurial returns distribution is more highly dispersed than the employee distribution. Locus of control and self-efficacy are also well established antecedents of entrepreneurial intent (for example Gatewood, Shaver and Gartner, 1995). As Moskowitz and Vissing-Jorgensen (2002) argue, it is clear from the proportion of wealth invested by entrepreneurs in their business ventures that some level of emotional commitment is present. Consistent with this, Cassar (2010) finds that new self-employed ventures which have completed a formal planning process have the least realistic forecasts.

In this view, the misperception of entrepreneurial prospects is an important determinant of entrepreneurial activity. Many entry decisions can therefore be viewed as mistakes, based upon overconfidence or unrealistic optimism (Camerer and Lovallo, 1999). Accumulating empirical evidence supports the perception that entrepreneurs overestimate the

returns to starting a business (Parker, 2009). Cooper, Woo and Dunkelberg (1988) found that a third of the entrepreneurs they surveyed put their odds of success at 10 out of 10, whilst attributing a much lower probability of success to other businesses that were similar to their own. Further studies have also investigated whether optimism is a specific characteristic of the self-employed or simply a general population trait. Recent studies by Arabsheibani *et al*. (2000) and Puri and Robinson (2007, 2013) find evidence that entrepreneurs do indeed have higher levels of optimism, both in estimating their financial prospects as well as being optimistic over other non-financial domains. Fraser and Greene (2006), using British data for the period 1984 – 1999, find evidence that the self-employed have higher income expectations than employees, however, the difference diminishes with experience. Importantly these studies suffer from the general limitation that it is difficulty to conclude whether optimism is an antecedent of self-employment choice or whether optimism arises as a result of the turbulent, uncertain environment within which the self-employed typically operate. Recent work by Dawson *et al*. (2014) finds that employees who enter into self-employment in the future are more optimistic than those employees who never enter self-employment, supporting the idea that the self-employed are predisposed to excessive optimism. Importantly, the study also finds optimism is higher still when individuals are observed in self-employment.

While optimism may drive too many people into entrepreneurship, selection on optimism has further important testable implications, in this paper the focus is on pay satisfaction. In principle, optimism may have positive or negative consequences for entrepreneurial satisfaction. The dispositional optimism and positive psychology literature has documented extensively that positive thinking can be beneficial for psychological well-being, as optimists cope in a more adaptive way to stress (see for example Scheier and Carver, 1993). For economists and in line with the psychology literature on optimistic bias,

the widely held view is that overoptimistic beliefs can be harmful and must lead to sub-optimal decision making, and as a consequence, lower utility (Puri and Robinson, 2007). One noticeable exception to this general rule is from Brunnermeier and Parker (2005), who argue that the anticipation of positive future outcomes allows individuals to take immediate pleasure in their future success. Individuals will therefore choose to be optimistic because the anticipatory utility outweighs any of the cost in realized outcomes. On the other hand, optimists overestimate the likelihood of positive events and therefore, will tend to overestimate their prospects in entrepreneurship. It follows that conditional on actual realized entrepreneurial performance optimists' subsequent satisfaction is likely to be lower through disappointment (Bell, 1985).[2] This theoretical standpoint is closely related to discrepancy theory in social psychology, where it is proposed that different types of self-discrepancies between an individual's actual/own self-state and their aspired state are represented by a range of negative psychological situations that are associated with discomfort (Higgins, 1987). Early work by Lawler (1971) modelled pay satisfaction as the gap between the amount an employee is paid and perceptions of what the employee thought he/she should be paid. An important determinant of what someone thinks they should be paid will be influenced by what the individual thinks they deserve (Rice, Phillips, and McFarlin, 1990), or what they expect. In this respect, Lawler's model of pay satisfaction is closely linked to the broader set of self-discrepancies encompassed by the 'expectation-reality gap theory' classification (Michalos, 1986), which suggests that satisfaction is a function of the discrepancy between an individual's actual performance and the individual's estimated expectation. The higher is optimism, the more biased are expectations and the wider is the scope for self-discrepancies. Michalos (1986), in his broad assessment of the empirical literature on discrepancy theory, found that 90 percent of the studies reviewed found an

[2] Optimists after entering self-employment and operating below expectations may also mistakably believe that another alternative venture would have been more preferable, which may impart a sense of regret, again lowering job satisfaction (Bell, 1982).

association between self-discrepancies and discomfort, with just over 50 percent of these studies using job satisfaction as a proxy for discomfort. Not only were these discrepancies found to be reliable predictors of satisfaction, these discrepancies also predicted a significant proportion of the variance in the twelve satisfaction domains investigated (Michalos, 1980, 1983). Owing to these self-discrepancies, individuals who receive the same amount of remuneration from employment can differ substantially in their expectations, and as a consequence, in their satisfaction levels. In keeping with the predictions of self-discrepancy theories the first hypothesis is formulated:

Hypothesis 1 (H1): More optimistic self-employment entrants will be associated with lower pay satisfaction.

Moreover, since entrepreneurship offers fertile conditions for optimism to thrive, such as, uncertainty, the perception of control and the presence of emotional commitments, the following relationship should hold:

Hypothesis 2 (H2): Optimism has a stronger negative effect on pay satisfaction for the self-employed than for employees.

DATA AND METHODOLOGY

The data used for the empirical analysis is drawn from the British Household Panel Survey (BHPS). This is a nationally representative general purpose household survey of 5,000 households (comprising approximately 12,000 individuals). Households are re-interviewed annually and the present analysis uses the 18 annual waves available between 1991 and 2008. The sample used for the subsequent analysis is restricted to the original BHPS sample

covering Great Britain and to employees and the self-employed who are below the state pension age (16-59 for women, 16-64 for men). While it is recognised that the self-employed are a disparate group, ranging from innovative entrepreneurs, to destitute workers unable to find work in the conventional employee labour market, self-employment status is the most commonly used measure of individual entrepreneurial status where researchers rely on secondary analysis of existing data (for example Evans and Leighton, 1989; Parker, 2009; Puri and Robinson, 2007; Van Praag and Cramer, 2001).

Measuring optimism

To test the relationship between optimism and job satisfaction, the first-stage of the empirical investigation is to construct the financial optimism measures. Simply, financial optimism is constructed as the miscalibration between a person's short-term financial expectations and their financial outcomes that follow. This measure of optimism is complementary, but distinct from previous research linking optimism and entrepreneurship, which has tended to focus on the overestimation of one's own entrepreneurial ability or performance. This paper tries to establish a link between general optimism—to have generally positively biased expectations—and entrepreneurship, by measuring optimism in a domain which is not specific to the individuals entrepreneurial venture. This measure of optimism is therefore in the spirit of Puri and Robinson (2007, 2013), who analyse the link between optimism and entrepreneurship by utilizing a measure of life-expectancy miscalibration. Specifically, three optimism measures are constructed based on information from two questions on financial forecasts and financial realizations, asked of all individuals in each year. The first is:

'Looking ahead, how do you think you yourself will be financially a year from now; better than you are now, worse than you are now, or about the same?'

Individuals who gave a valid response at year *t* are then matched with their self-reported financial realisation at year *t+1*, obtained from the second question:

'*Would you say that you yourself are better off, worse off or about the same financially than you were a year ago?'* [3]

1) Optimists have a generalized tendency to overestimate the likelihood of positive outcomes, which implies a tendency for optimists to incur positive forecast errors when assessing their short-term financial well-being. In this view, one way to construct optimism from data of this type is to follow Arabsheibani *et al*. (2000) and Dawson *et al*. (2014, 2015), where forecasts and realizations may be cardinalized on three-point scales from which a five-point measure of forecast error or financial expectation miscalibration can be constructed. The forecast error is defined as the difference between the financial forecast (of *t+1*) at *t* minus the financial realization at *t+1*. The first step is then to estimate a linear fixed effect regression of the form presented in equation (1), where E_{it} is the forecast error by individual *i* at time *t*. X is a vector of demographic and other personal control variables and z_i^1 is the individual fixed effect. The first measure of optimism (*Optimism 1*) is the individual fixed effect extracted from equation (1), z_i^1, which provides individually-varying estimates of optimism net of any environmental influences.

$$E_{it} = X'_{it}\,\beta + z_i^1 + \varepsilon_{it} \qquad (1)$$

2) A less restrictive approach than *Optimism 1*, which does not involve collapsing nine combinations of forecasts and realizations into a five point error, is to model financial

[3] Reassuringly, Brown and Taylor (2006) find consistency between an individual's financial forecasting accuracy and their actual changes in financial situation by comparing responses to these questions with real and nominal changes in actual income.

realizations as the outcome while controlling for variation in financial forecasts on the right-hand side of the fixed effect linear regression model presented in equation (2). R_{it+1} is the realization of individual *i* at time *t+1* and F_{it} is the forecast in the previous period. As with equation (1), X is a vector of demographic and other personal control variables and z_i^2 is the individual fixed effect. The second measure of optimism (*Optimism 2*) is the individual fixed effect from equation (2), z_i^2. Optimistic individuals have higher forecasts than they should, therefore, conditional on financial forecasts, optimists will produce lower realizations. Maintaining the same range, *Optimism 2* is rescaled so that it is increasing in optimism.

$$R_{it+1} = X'_{it}\beta + \alpha F_{it} + z_i^2 + \varepsilon_{it} \quad (2)$$

3) While under rational expectations the difference between an individual's forecast and corresponding realization is zero, rational expectations also implies that individuals with the largest forecast errors must have been unlucky. Therefore under rational expectations, *Optimism 1* and *Optimism 2* are not capturing a general optimistic bias, but rather a history of bad luck, which may also be a strong predictor of job satisfaction. Following Puri and Robinson (2007) and Dawson *et al*. (2014), a further measure of optimism is constructed which is the difference between the realistic probability of an individual's financial realization at time *t+1* given his/her various characteristics and the individuals financial forecast at time *t*. This involves a two stage procedure; where the first stage is to estimate a linear fixed effect financial forecast equation as presented in equation (3). Where F_{it} is the forecast of individual *i* at time t.

$$F_{it} = X'_{it}\,\beta + z_i^3 + \varepsilon_{it} \tag{3}$$

The second stage is to estimate a fixed effect realization equation as in equation (4), where R_{it+1} is the realization of individual *i* at time *t+1*. Again in both equations (3) and (4), X is a vector of demographic and other personal control variables and z_i is the individual fixed effect.[4]

$$R_{it+1} = X'_{it}\,\beta + z_i^4 + \varepsilon_{it} \tag{4}$$

The third measure of optimism (*Optimism 3*) is then defined in equation (5).

$$z_i^3 - (\hat{R}_{it+1} + z_i^4) \tag{5}$$

In summary, *Optimism 1* and *Optimism 2* measure the difference between individual forecasts and corresponding realizations net of any environmental factors. *Optimism 3* in contrast measures the difference between an individual's underlying forecast preference (net of environmental influences) and their corresponding predicted rational expectation, based on their stock of observables and any private information captured by the individual fixed effect.

The three optimism measures are constructed from pooled first-stage regressions for two groups of individuals who will be referred to throughout this paper as *futures* and *permanents*. *Futures* are those who are currently in paid-employment but who subsequently

[4] The problems with nonlinear fixed effects models lead us to estimate equations (1), (2), (3) and (4) using a linear formulation albeit that the cardinalization that realizations involve equal increments is somewhat arbitrary. Equations (1), (2), (3) and (4) also contain standard socio-demographic controls, these controls include age, age squared, marital status, number of children, whether spouse/partner employed, education, housing tenure, region of residence and year dummies. Additionally, all equations include financial realizations dummies at time *t* and equation (2) also includes forecast dummies at time *t*.

become self-employed at some point later in the panel.[5] A transition into self-employment is defined to have occurred if an individual's full-time or main economic status changes to that state. Consequently, these measures give individually-varying estimates of optimism for individuals in paid-employment prior to entry into self-employment. Exploiting available longitudinal data in this manner eliminates the concern, evident in a cross-sectional approach, that low financial realizations could explain both low self-employed job satisfaction and optimism. Importantly the three optimism measures are based on information available up to the year prior to transition. Information from the actual transition period is not included in the calculations of optimism in order to avoid any overlap in the periods covered by dependent and independent variables in the subsequent second-stage job satisfaction equations. *Permanents* are those paid-employees who never make the transition into self-employment within the period covered by the dataset, for this group optimism is measured over the first half of their period in the panel. The correlation coefficients between the three optimism measures are relatively high, with the highest correlation being between *Optimism 1* and *Optimism 3* (0.877) and the lowest correlation being between *Optimism 2* and *Optimism 3* (0.620). The formal regressions presented above are reported in Table A2 of the Appendix, with accompanying descriptive statistics in Table A1. In total there are 27,889 observations from 6,897 individuals, therefore the optimism measure is on average constructed from four observations per individual. Of these 27,889 observations there are 4,316 *futures* observations from 840 individuals.

Optimism and job satisfaction

[5] A small number of transitions into part-time self-employment alongside full-time or part-time paid employment are excluded from the *futures* group. Individuals that are currently in paid-employment and were previously in the panel defined as self-employed are also deleted. This enables the analysis to be focused only on the first observable transition into self-employment which ensures optimism is constructed for individuals prior to entry into self-employment. Moreover, Dawson and Henley (2013) find evidence that multiple entrants into self-employment have lower optimism than first time entrants, suggestive of some learning through experience.

In the second-stage of this empirical investigation, separate job satisfaction equations are estimated firstly for our sample of self-employed individuals who were previously characterised as *futures* and secondly for *permanents* over the second part of their paid-employment period. Responses for job satisfaction questions within the BHPS are given on a 7 point Likert scale ranging from 'not satisfied at all' to 'completely satisfied', consequently the second-stage equations are estimated using an ordered logistic model. The BHPS contains detailed information on job satisfaction, where respondents are asked to rate their job satisfaction on 5 items: (1) overall job satisfaction, (2) satisfaction with pay, (3) satisfaction with job security, (4) satisfaction with hours worked and lastly, (5) satisfaction with the work itself. The primary interest is the effect of prior optimism on the dimension of job satisfaction associated with pay, as previous work looking at the link between optimism and excessive entry into entrepreneurship, has predominately focused on biased perceptions of the entrepreneurial returns distribution (Astebro *et al*., 2014) and the entrepreneur's chances of success (Camerer and Loavallo, 1999). However, also of interest is the extent to which biased expectations affect more general worker well-being. Optimists may also overestimate the non-pecuniary benefits associated with self-employment. Overall job satisfaction is therefore also included alongside satisfaction with pay as an outcome variable of interest.

Formal tests of the relationship between financial optimism and job satisfaction are described in the second-stage regression presented in equation (6):

$$JS_{it}^{j} = X_{it}^{'}\beta + \gamma\ Optimism_{i}^{n} + \lambda Pastearnings_{i} + \phi Currentearnings_{i\,t} + \mu PastJS_{i}^{j} + \varepsilon_{it} \quad (6)$$

where JS_{it}^{j} is job satisfaction for individual i at time t for job satisfaction measure j. X is a vector of demographic, job-specific and other personal control variables. $Optimism_{i}^{n}$ is an

individual varying measure of prior optimism from the first-stage paid-employment optimism equations. All three prior financial optimism measures are standardised and included separately in the second-stage job satisfaction regressions. One potential criticism of the method is that by construction, *Optimism 1* and *Optimism 2* will tend to be negatively correlated with realizations. If expectations are not rational, those with the highest financial optimism will tend to be those with the lowest earnings power in paid-employment. On the contrary, to the extent to which expectations are rational, it could be argued that *Optimism 3* is a proxy for unobserved private information about earnings power. While equation (6) includes a control for present earnings ($Currentearnings_{it}$), and as such controls for contemporary earnings power, it is however possible that prior performance in paid-employment may impact upon contemporaneous and future pay satisfaction. To eliminate this possibility, when estimating the effect of prior optimism on job satisfaction, a prior paid-employment earnings indicator is included as a further control ($Pastearnings_i$). This is the individual fixed-effect extracted from a log of hourly wage equation (Table A3) for individuals in all paid-employment periods in which optimism is measured. A final important control is prior job satisfaction ($PastJS_i^j$). This is the individual fixed-effect extracted from a job satisfaction equation (Table A4) again estimated over the periods for which optimism is measured. Equation (6) therefore measures the effect of prior optimism on contemporary job satisfaction, for individuals with the same prior paid-employment earnings and job satisfaction history.

Table 1 summarizes the descriptive statistics for the dependent and independent variables which are used in the second-stage job satisfaction equations, for our self-employed and paid-employed samples. Importantly, despite the self-employed reporting higher levels of hours worked and lower earnings than employees, the self-employed report a substantially

higher mean level of job satisfaction on both indicators. For the self-employed, the mean levels of overall job satisfaction and pay satisfaction are respectively, 5.6 and 5.2, while for employees the means are significantly lower at 5.3 and 5.0. It is worth further noting that the self-employed are more likely to be male, reflecting the lower proportion of women amongst the UK self-employed. Employment experience is captured through the inclusion of a tenure variable; the high failure rates during the first few years of self-employment may eliminate the least satisfied. The mean self-employment tenure in the sample is 3.7 years and 5.6 years for employees. Just over 71 percent of the self-employed report having no employees and approximately 10 percent report holding a second job.

[INSERT TABLE 1 HERE]

The main focus of this paper is to examine the relationship between prior optimism and pay satisfaction. Table 2 provides tabulations that begin to shed some light on the question in hand. For both the self-employed and employees, those who are in the most optimistic quintiles of the prior financial optimism distributions, *prima facie*, have considerably lower mean levels of pay satisfaction and overall job satisfaction than those individuals in the least optimistic quintile. In particular, self-employed individuals in the least optimistic quintile report mean job satisfaction with pay of between 5.46 and 5.57 depending on the optimism measured used. While those in the most optimistic quintile report average satisfaction with pay between 5.04 and 5.17. Smaller but still noticeable differences are also observed for overall job satisfaction.

[INSERT TABLE 2 HERE]

RESULTS

This section reports formal multivariate regression analysis of the relationship between job satisfaction and prior financial optimism for employees and the self-employed. Equation (6) is estimated using an ordered logistic regression and odds ratios are reported for ease of interpretation. While the main focus is with the optimism measures, other significant job satisfaction effects revealed in the other covariate estimates presented in Table 3 are briefly described. It is worth noting that the inclusion of the prior job satisfaction control, which is the individual fixed-effect from a prior paid-employment job satisfaction equation, means that the time-invariant second-stage coefficients measure differential effects. Firstly satisfaction tends to be lower for men, providing further evidence for the paradox of the satisfied female worker (Clark, 1997).[6] Secondly, there is a strong and negative relationship between education and job satisfaction. This follows earlier results from Clark and Oswald (1996), which they suggest is due to education raising ambition targets. Thirdly, higher prior job satisfaction is strongly associated with contemporary job satisfaction. Fourthly, hours worked is negatively related to job satisfaction for employees, for the self-employed the relationship is positive but not statistically significant, suggesting that self-employment offers substantial procedural utility. Lastly, current earnings are positively correlated with pay satisfaction, but the relationship is much stronger for employees, corroborating the view that individuals may choose self-employment for other non-pecuniary benefits. Common in many other studies is the modest strength of the relationship between overall job satisfaction and current earnings (Clark, 1996; Clark and Oswald, 1996; Lawler, 1971), particularly for the self-employed. An explanation is that satisfaction is likely to be determined by relative measures based on some comparison level or reference group, rather than simply an absolute measure. In the spirit of Clark and Oswald (1996) an individual's job satisfaction with pay

[6] The paradox of the contented female worker is based on the idea that women are aware and concerned about the gender wage gap and other gender inequalities in the labour market but women do not report significantly greater dissatisfaction with their labour market outcomes.

can be determined by: $JS^{Pay} = f(y, y^*, i, j)$, where y is income, i and j are individual and job specific characteristics, and y^* is a comparison level of income constructed as the fitted values from a Mincer equation, where wages are determined by a set of individual and job-specific characteristics. Therefore y^* can therefore be interpreted as the typical income of an individual with given characteristics. The higher is y^*, the lower is the individual's relative income and the lower the individual's job satisfaction through relative deprivation or envy. In contrast, Lawler's (1971) theory suggests pay satisfaction can be determined by: $JS^{Pay} = f(y, e^*, i, j)$, where e^* represents the individuals performance expectations. The higher is e^*, the more likely it is that these expectations are unfulfilled and the lower is the individuals' pay satisfaction through disappointment and self-discrepancy. The theory in this paper extends Lawler's (1971) model, by specifying that performance expectations are determined by an individual's optimism (θ), such that, an individual's pay satisfaction can be determined by: $JS^{Pay} = f(y, e^*(\theta), i, j)$. The starting point is at $\theta = 1$, where performance expectations are rational. The higher is θ, the more upwardly biased are expectations, the wider is the scope for self-discrepancies between expected and actual labour market returns and the lower is JS^{Pay}. The remainder of this section reviews whether the empirical evidence supports this theoretical framework.

[INSERT TABLE 3 HERE]

Models 1, 2 and 3 reported in Table 3 reflect the estimated effects of optimism on job satisfaction for each of the prior financial optimism measures. The results in columns (1) and (2) of Table 3 illustrate a strong negative relationship between all optimism measures and job satisfaction measures. For the self-employed, the odds ratios presented in column (1) suggests the proportional odds of being in the most satisfied group associated with pay satisfaction versus the combined other categories is 0.693 times lower given a one standard deviation

increase in prior optimism (*Optimism 2*). For employees, the corresponding proportional odds ratio is 0.905. For overall job satisfaction, the odds ratios for optimism are all below one and statistically significant at the conventional levels. However, the odds ratios are much closer to one when compared to the pay satisfaction equations, suggesting the effects of prior financial optimism are less detrimental to overall job satisfaction. For instance, for the self-employed, the odds ratios presented in column (1) of Table 3 suggests the proportional odds of being in the most satisfied group associated with overall job satisfaction versus the combined other categories is 0.827 times lower given a one standard deviation increase in prior optimism (*Optimism 2*). These initial findings provide support for H1, in that the more optimistic self-employed entrants are associated with lower pay satisfaction.[7]

A further area of interest is the extent to which optimism matters more in self-employment than in paid-employment. Optimism thrives under uncertainty (Kahneman *et al*., 1982) and when outcomes are perceived to be under the individual's control (Darvill and Johnson, 1991). The large dispersion of entrepreneurial returns (Astebro *et al*., 2014), coupled with the desire of nascent entrepreneurs to control their own economic destinies (Gatewood, Shaver and Gartner, 1995), suggests self-employment may offer productive conditions for optimism to flourish. If self-employment widens the scope for financial prospects to be exaggerated, the unfavourable effects of optimism on pay satisfaction should be more noticeable. Therefore an individual's pay satisfaction can be determined by:

[7] There is some evidence that the relationship between optimism and overall job satisfaction is non-linear for the self-employed and employees. In particular, turning points occur for extreme optimists and extreme pessimists, however the turning points tend to be outside the observable ranges of the data and hence optimism is included as a linear predictor. Robustness checks are also undertaken to identify the extent to which extreme optimism or pessimism are driving the results. This is done following Puri and Robinson (2007, 2013) by including extreme optimism and extreme pessimism into the job satisfaction equations alongside the optimism variable. Extreme optimism (pessimism) is a dummy variable that takes on the value of one if the respondent is in the 2.5 percent right tail (left tail) of the optimism distribution. The results suggest that the effects are not driven by those with extreme beliefs. An additional test was also to include a graduate/optimism interaction in the self-employed job satisfaction equations. This did not yield any significant coefficients, suggesting that the optimism effect is not restricted to those with low human capital and hence those who may have been forced to accept self-employment owing to a lack of viable paid-employment options.

$JS^{Pay} = f(y, e*(\theta^{\lambda}), i, j)$, where λ is increasing in uncertainty and for outcomes perceived to be directly under the individuals control. To investigate this proposition, pooled second-stage job satisfactions equations are estimated, which include a full set of self-employed interactions in order to allow the coefficients to vary between employment groups, and also to identify any fundamental differences in the effects of optimism on job satisfaction between groups. The main effects are presented in Table 4. The results show that the interaction effect between optimism and self-employment is statistically significant at the one percent level for all optimism measures in the pay satisfaction equations. The relationship between prior optimism and pay satisfaction is significantly more negative for the self-employed than for employees. For overall job satisfaction the interaction effects between self-employment and optimism are not statistically significant at the conventional levels.

[INSERT TABLE 4 HERE]

An alternative representation of the difference in optimism effects on pay satisfaction between our employment groups is to plot the predicted probabilities of being in the most and least satisfied groups associated with job satisfaction, varying only optimism and keeping all other covariates set at their corresponding means. Figures 1 and 2 show the results for this procedure for employees and the self-employed where mean optimism is standardised to zero. As suggested by previous research, the self-employed have higher job satisfaction than employees. If the effects of optimism on job satisfaction are the same for the two groups, then the connected plots of predicted probabilities would have the same slope. Figure 1 plots the predicted probabilities of being in the most satisfied groups associated with pay satisfaction and overall job satisfaction. For *Optimism 2,* moving from the least optimistic to the most optimistic, reduces the probability of being in the most satisfied group associated with pay by 22.8 percentage points for the self-employed, and by 3.2 percentage points for employees.

Figure 2 illustrates the effects of optimism on the probabilities of being in the least satisfied job satisfaction category associated with pay, moving from the least to the most optimistic entrepreneur's increases the probability by 3.7 percentage points and for employees by 0.93 percentage points. These results are consistent with self-employment offering fertile conditions for optimism to thrive and support H2, in that optimism has a more negative effect on pay satisfaction for the self-employed than for employees. Moreover, whilst optimism reduces overall job satisfaction for both the employed and self-employed alike, the magnitudes of the effect are similar for both employment groups, as evidenced by the parallel connected plots in Figures 1 and 2.

[INSERT FIGURES 1 and 2 HERE]

One potential caveat of these results is that it may not be self-employment in itself that widens the scope for optimism, but simply the job transition associated with entry into self-employment. To test this proposition, the procedure outlined above and presented in Table 4 is repeated but where employees are separated into two groups; 1) employees who have not changed employers and, 2) employees who have a new job with a new employer. The results are reported in Table 5. The interaction effects between employee job changers and optimism are not statistically significant in any off the models. Whilst the net effect for employee job changers is that optimism reduces job satisfaction, the odds ratios on the interaction terms tend to be above unity, suggesting optimism has a smaller negative effect for job changers. These results together suggest it is self-employment that widens the scope for prospects to be exaggerated and not job transitions.[8]

[INSERT TABLE 5 HERE]

[8] A further robustness check is to include a dummy variable for job transition in the first stage employee fixed effect optimism equations. Optimism may therefore be more precisely defined by excluding the impact of job transitioning and the uncertainty that this may induce. This approach yields results which are wholly consistent with those reported in the main body of text.

In a final test, it is investigated whether optimist's dissatisfaction with labour market returns is a key driver in determining overall job satisfaction. That is, if optimists had the same job satisfaction with pay as everyone else, would optimism have any real effect on overall job satisfaction? In the spirit of Clark (1997) and Green and Heywood (2011), satisfaction with pay is included as a control variable in separate self-employed and employee overall job satisfaction equations. Using this specification and holding constant job satisfaction with pay produces optimism coefficients which are no longer statistically significant in any of the models. This suggests that optimist's dissatisfaction with pay drives the overall job satisfaction effect.

CONCLUSION

Accumulating research provides evidence that entrepreneurs are predisposed to excessive optimism; however limited empirical attention has been given to the potential consequences of selection on optimism. Optimists overestimate the likelihood of positive events and will therefore tend to overestimate their prospects in entrepreneurship. Building on self-discrepancy theory from social psychology, this paper finds that optimism—measured for individuals prior to entry—is associated with lower entrepreneurial pay satisfaction, primarily through widening the scope for self-discrepancies between expected and actual self-employment performance. More specifically, the least optimistic entrepreneurs have an 85 percent higher chance of being in the most satisfied category associated with pay satisfaction than the most optimistic entrepreneurs, all other things equal. While these results might point to the importance of engaging in business planning and acquiring training and professional advice in advance of entrepreneurship, paradoxically such activity may exacerbate further such decision-making biases (Cassar, 2010). Further evidence is also provided that prior

optimism also decreases employee pay satisfaction, but since entrepreneurship widens the scope for returns to be overestimated, the effects are stronger for the self-employed. One specific implication of these findings is that the link between pre-entrepreneurial job dissatisfaction and transitions into self-employment (Guerra and Patuelli, 2014), is likely to represent, at least in part, optimism effects.

In general, these results suggest that optimism, one of the most prevalent cognitive biases (Weinstein, 1980) has significant implications for labour market behaviour and overall entrepreneurial job satisfaction. Specific to the self-employed, pay satisfaction has been shown to be an important determinant of firm survival (Georgellis *et al*., 2007). For employees extant research has highlighted the implications of job satisfaction on numerous important labour market behaviours, such as quitting intentions, absenteeism and productivity. These finding therefore suggest that optimism may lead to a higher than optimal labour turnover rate in both the paid and self-employment labour markets. For the employee labour market this is likely to have implications on employer's labour costs. For the self-employed this is likely to have consequences for the efficiency of resource allocation as optimism implies both entrepreneurial entry and exit rates are likely to be too high. Whilst financial performance may be of particular importance for entrepreneurs, entrepreneurial exits may be slowed by non-financial motives for remaining self-employed, such as personal independence and procedural utility. Moreover, if optimism increases on becoming self-employed as Dawson *et al*. (2014) suggest, optimism in itself may serve to slow entrepreneurial exits, despite the associated disappointment with entrepreneurial returns. Specifically, optimism has been linked with higher motivation, greater persistence at tasks and a tendency to reframe negative situations which may lead to optimistic entrepreneurs persisting in businesses too long, when withdrawal would be wiser (Coelho, 2010). This again is a further source of resource misallocation.

Importantly, this paper also finds that pay satisfaction mediates the observed negative relationship between optimism and overall job satisfaction. This implies that pay satisfaction is likely to have significant spill-over effects into other aspects of overall individual well-being (Argyle, 2013). Whilst previous studies in the dispositional and positive psychology literature have focused on the benefits of positive thinking on psychological well-being, it is left for further studies to analyse the negative consequences of overly optimistic beliefs on other aspects of individual level subjective well-being. If optimism is in part a human reaction to uncertainty and incomplete information, policies to promote the accurate dissemination of labour market returns may encourage the formation of more cautious expectations, improving the overall satisfaction, productivity and resource allocation of the labour market.

Finally, as optimism encourages entry into self-employment but depresses job satisfaction, this paper strongly rejects the argument that the job satisfaction advantage experienced by the self-employed is due to the self-selection of optimists (Blanchflower and Oswald, 1998). In fact, the data suggests that after taking into consideration both the endowment and coefficient effects of optimism, the self-employment job satisfaction advantage would increase by approximately 10 percent for pay satisfaction. These results lead us to the final conclusion that previous studies may underestimate the positive effects of self-employment on job satisfaction, and secondly, that the self-employment job satisfaction advantage is likely governed by greater procedural freedom and autonomy and not by personality traits thought to be synonymous with self-employment.

ACKNOWLEDGMENTS

The author would like to thank David de Meza, two anonymous referees and an associate editor for their very helpful comments.

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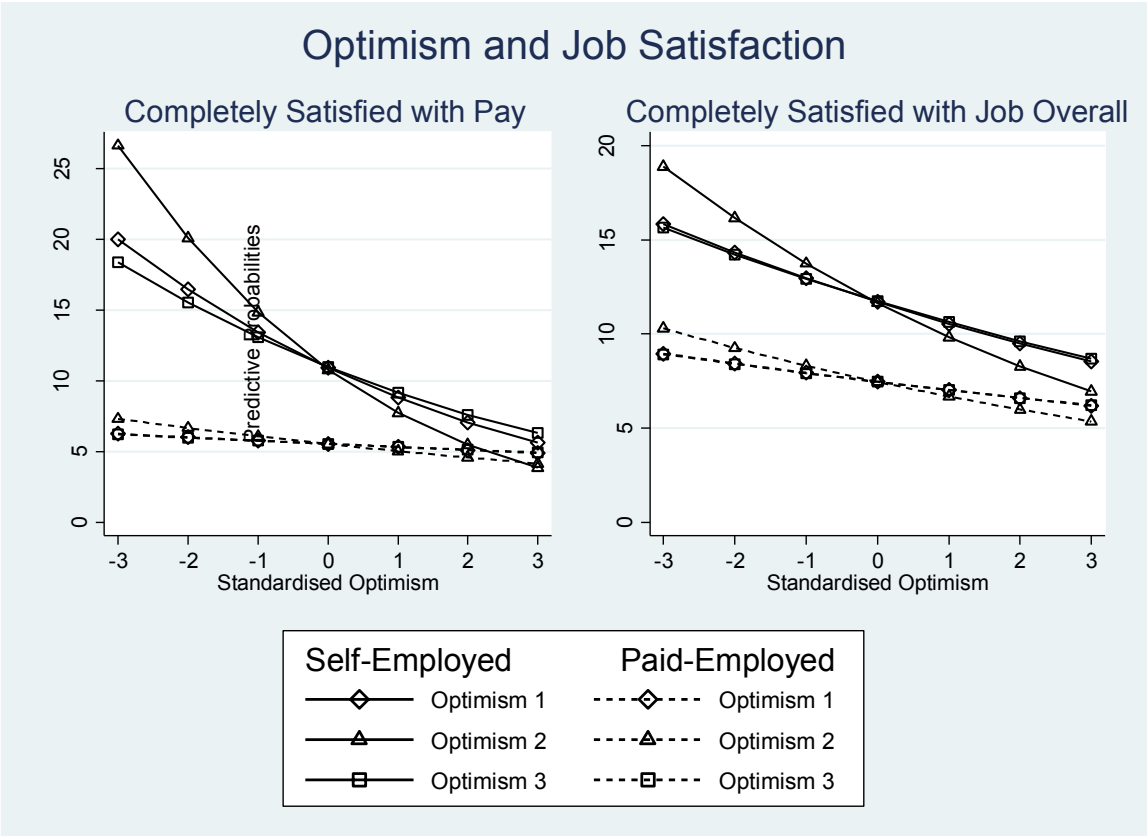

Figure 1: Optimism and the predicted probabilities of being 'completely satisfied'

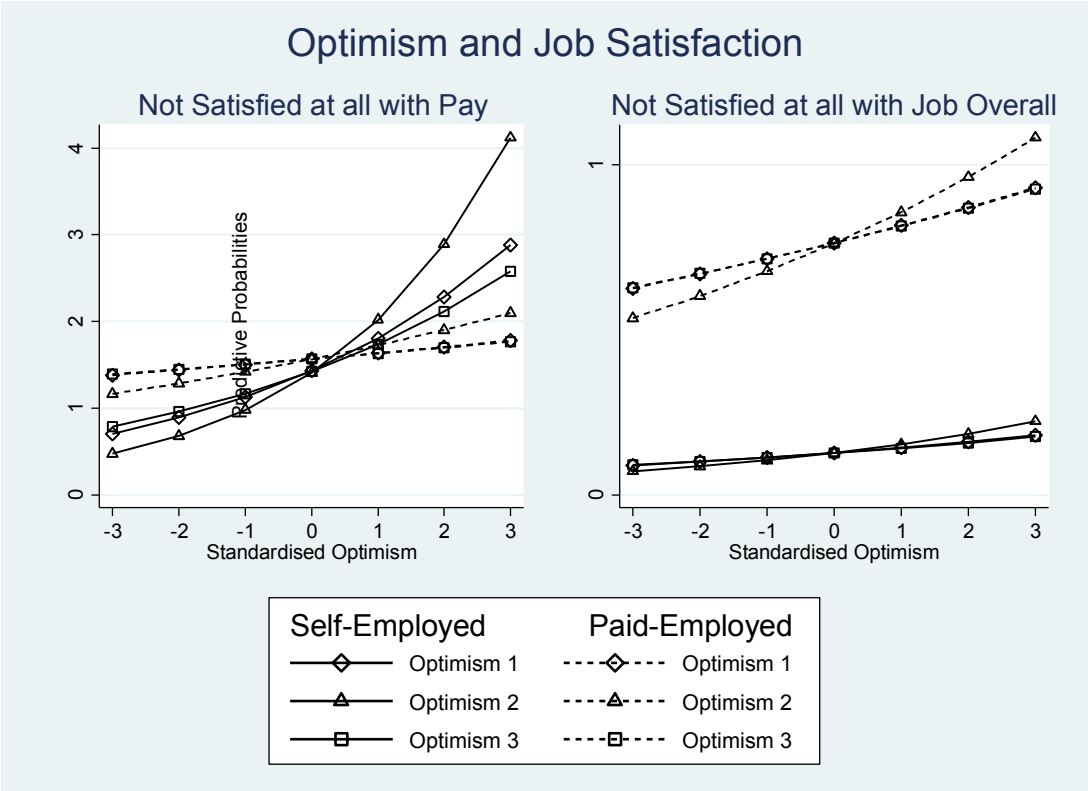

Figure 2: Optimism and the predicted probabilities of being 'not satisfied at all'

Table 1: Descriptive statistics

	Self-employed		Paid-employed	
Variables	Mean	*Std. Dev.*	Mean	*Std. Dev.*
Dependent variables				
Job satisfaction:				
Satisfaction with job overall	5.632	1.059	5.334	1.238
Satisfaction with pay	5.236	1.416	4.997	1.438
Independent variables				
Fixed effects controls:				
Prior earnings	0.081	0.489	-0.017	0.371
Prior job satisfaction with pay	-0.021	1.350	0.023	1.220
Prior overall job satisfaction	-0.133	1.260	0.016	0.998
Demographics:				
Age	41.372	10.469	41.914	10.666
Age²	1821.212	887.752	1870.531	897.931
Male	0.698		0.474	
Marital status and household composition:				
Single, never married	0.126		0.142	
Widowed/divorced/separated	0.058		0.089	
Married/cohabiting, partner employed	0.667		0.658	
Married/cohabiting, partner not employed	0.150		0.111	
Number of dependent children in household	0.805		0.619	
Educational attainment:				
University	0.173		0.177	
HND/HNC	0.089		0.078	
A-levels	0.248		0.217	
O-levels/GCSEs	0.310		0.364	
No qualifications	0.180		0.163	
Labour market characteristics:				
Normal hours worked per week	42.954	15.831	34.531	9.441
Normal hours worked per week²	2095.594	1441.162	1281.504	628.584
Current earnings – log of monthly pay/profits	6.287	2.464	7.212	0.711
Length of tenure	3.688	4.442	5.646	6.523
Length of tenure²	33.325	93.855	74.426	167.008
Have a second job	0.098		0.072	
No. of employees:				
0	0.716			
1-2	0.129			
3-9	0.098			
10-24	0.025			
25-49	0.011			
50-99	0.003			
100-199	0.007			
200-499	0.005			
≥ 500	0.002			

Firm size -number of co-workers:		
1-9		0.147
10-24		0.161
25-49		0.133
50-99		0.119
100-199		0.107
200-499		0.142
500 - 1000		0.072
>1000		0.119
N	2,063 (606 individuals)	26,667 (5,639 individuals)

Table 2: Prior optimism and job satisfaction

	Self-employed		Paid-employed	
	Lowest quintile - *least optimistic*	Highest quintile - *most optimistic*	Lowest quintile - *least optimistic*	Highest quintile - *most optimistic*
	Mean	Mean	Mean	Mean
a. Optimism 1				
Satisfaction with job overall	*5.69*	*5.60*	*5.38*	*5.29*
Satisfaction with pay	*5.57*	*5.16*	*5.13*	*4.83*
b. Optimism 2				
Satisfaction with job overall	*5.66*	*5.55*	*5.41*	*5.22*
Satisfaction with pay	*5.50*	*5.17*	*5.16*	*4.78*
c. Optimism 3				
Satisfaction with job overall	*5.69*	*5.49*	*5.40*	*5.22*
Satisfaction with pay	*5.46*	*5.04*	*5.11*	*4.79*

Table 3: Ordered logistic job satisfaction regressions

	(1) Self-employed		(2) Paid-employed	
Dependent variable	(a) Overall	(b) Pay	(a) Overall	(b) Pay
Model 1	Odds Ratio	Odds Ratio	Odds Ratio	Odds Ratio
Optimism 1	0.890*	0.788***	0.936***	0.958**
Full control variables	*Yes*	*Yes*	*Yes*	*Yes*
Model 2				
Optimism 2	0.827**	0.693***	0.889***	0.905***
Full control variables	*Yes*	*Yes*	*Yes*	*Yes*
Model 3				
Optimism 3	0.895*	0.818***	0.934***	0.960**
Full control variables	*Yes*	*Yes*	*Yes*	*Yes*
Control variables from Model 1 specification				
Fixed effects controls				
Prior Earnings	0.884	1.429**	0.898	0.896
Prior Job Satisfaction	1.501***	1.330***	2.382***	2.054***
Demographics				
Age	1.018	0.966	1.006	0.976*
Age²	1.000	1.001	1.000*	1.000***
Male	0.825	0.756	0.983	0.800***
Marital status and household composition (reference: single, never married)				
Widowed/divorced/separated	1.701	1.569	1.030	1.050
Married/cohabiting-partner employed	1.157	1.293	1.059	1.174***
Married/cohabiting-partner not employed	1.141	1.528	1.098	1.079
Number of dependent children in household	0.928	0.977	1.006	0.994
Educational attainment				
University	0.375***	0.620*	0.795***	1.011
HND/HNC	0.496**	0.680	0.752***	0.983
A-level	0.461***	0.659*	0.806***	0.973
O-levels/GCSEs	0.467***	0.675*	0.806***	0.998
Labour market characteristics				
Normal hours worked per week	1.015	1.001	0.939***	0.864***
Normal hours worked per week²	1.000	1.000	1.000***	1.001***
Current earnings – log of monthly pay/profits	1.033	1.095***	1.477***	3.902***
Length of tenure	0.963	0.994	0.924***	0.946***
Length of tenure²	1.001	1.000	1.002***	1.002***
Have a second job	1.208	0.986	1.030	0.870**
No. of employees (reference: 0 employees)				
1-2	0.977	1.019		
3-9	1.627**	1.750***		
10-24	1.575	1.685*		

25-49	1.408	1.384		
50-99	1.903	2.753		
100-199	2.376**	5.080**		
200-499	0.863	2.951**		
≥ 500	0.464	0.910		
Firm size -number of co-workers (reference: ≥ 500)				
1-9			1.267***	1.221***
10-24			1.018	1.082
25-49			0.992	1.002
50-99			0.926	0.965
100-199			0.928	0.975
200-499			0.871**	0.939
Standard industrial classification dummies	*Yes*	*Yes*	*Yes*	*Yes*
Region dummies	*Yes*	*Yes*	*Yes*	*Yes*
Year dummies	*Yes*	*Yes*	*Yes*	*Yes*
Log Likelihood	-2492.97	-3061.02	-35812.82	-38944.44
Wald Chi²	161.7***	195.4***	2101.96***	2605.2***
N	2,063 (606 individuals)		26,667 (5,639 individuals)	

Note: All regressions include standard errors that are bootstrapped and clustered by individual. Year dummies and a set of regional dummies are also included (odds ratios not reported). * indicates significance level (p-value) below 0.10, ** below 0.05 and *** below 0.01. The odds ratios reported for the control variables are from the equations which include *Optimism 1* as a covariate.

Table 4: Pooled ordered logistic job satisfaction regressions

	Pooled self-employed and paid-employed	
Dependent variable	(a) Overall	(b) Pay
Model 1	Odds Ratio	Odds Ratio
Optimism 1	0.937***	0.960**
Optimism 1 * self-employed	0.942	0.780***
Model 2		
Optimism 2	0.892***	0.909***
Optimism 2 * self-employed	0.925	0.721***
Model 3		
Optimism 3	0.938***	0.962**
Optimism 3 * self-employed	0.948	0.816***
N	28,730 (6,245 individuals)	

Note: All regressions include standard errors that are bootstrapped and clustered by individual. All regressions include a full set of control variables. These controls include prior earnings, prior job satisfaction, age, age squared, gender, marital status, number of dependent children, whether spouse/partner employed, education, labour market characteristics, standard industrial classifications, year dummies and a set of region of residence dummies. A full set of self-employment interactions are also included in order to allow the covariates to vary

between employment types. * indicates significance level (p-value) below 0.10, ** below 0.05 and *** below 0.01.

Table 5: Pooled ordered logistic job satisfaction regressions

	Pooled self-employed and paid-employed	
Dependent variable	(a) Overall	(b) Pay
Model 1	Odds Ratio	Odds Ratio
Optimism 1	0.934***	0.957**
Optimism 1 * self-employed	0.944	0.783***
Optimism 1 * employee – job changers	1.012	1.018
Model 2		
Optimism 2	0.898***	0.907***
Optimism 2 * self-employed	0.919	0.722***
Optimism 2 * employee – job changers	0.969	1.005
Model 3		
Optimism 3	0.931***	0.960**
Optimism 3 * self-employed	0.955	0.818***
Optimism 3 * employee – job changers	1.032	1.013
N	28,730 (6,245 individuals)	

Note: See notes for Table 4.

APPENDIX

Table A1: Descriptive statistics

	Futures		*Permanents*	
Variable	Mean	*Std. Dev.*	Mean	*Std. Dev.*
Financial forecasts and realizations				
Financial forecast (t):				
Better off	0.419		0.380	
Same	0.484		0.520	
Worse off	0.097		0.100	
3 point scale (*dependent variable*)	0.323	0.642	0.280	0.633
Financial realization (t+1):				
Better off	0.387		0.377	
Same	0.382		0.402	
Worse off	0.231		0.221	
3 point scale (*dependent variable)*	0.156	0.770	0.156	0.758
Financial realization (t):				
Better off	0.412		0.399	
Same	0.355		0.379	
Worse off	0.233		0.222	
3 point scale	0.179	0.783	0.176	0.768
Forecast error:				
5 point scale (*dependent variable*)	0.166	0.885	0.124	0.849
Demographics				
Age	35.183	10.132	34.641	10.281
Age²	1340.491	741.934	1305.668	742.527
Male	0.629		0.481	
Marital status and household composition				
Single, never married	0.220		0.226	
Widowed/divorced/separated	0.054		0.063	
Married/cohabiting-partner employed	0.595		0.616	
Married/cohabiting-partner not employed	0.131		0.094	
Number of dependent children in household	0.686	0.961	0.719	0.969
Educational attainment				
University	0.196		0.155	
HND/HNC	0.085		0.076	
A-level	0.249		0.209	
O-levels/GCSEs	0.312		0.388	
No qualifications	0.157		0.172	
Housing tenure				
Outright owner	0.099		0.098	
Own with mortgage	0.740		0.703	

Private sector rental	0.095	0.087
Social sector rental	0.066	0.111
N	4,316 (840 individuals)	23,573 (6,057 individuals)

Table A2: Linear fixed effects optimism equations

Equation	(1)	(2)	(3)	(4)
Dependent variable	Forecast error	Realization *t+1*	Forecast *t*	Realization *t+1*
Variable	Coefficients	Coefficients	Coefficients	Coefficients
Demographics				
Age	-0.027	-0.018	-0.054***	-0.027
Age²/100	-0.001	0.053***	0.064***	0.064***
Marital status and household composition (reference: single, never married)				
Widowed/divorced/separated	-0.081	0.080	-0.001	0.081
Married/cohabiting-partner employed	-0.013	0.029	0.020	0.033
Married/cohabiting-partner not employed	-0.045	0.079**	0.042	0.086**
Number of dependent children in household	0.046***	-0.008	0.047***	0.001
Educational attainment (reference: no qualifications)				
University	0.113	0.003	0.139	0.026
HND/HNC	-0.054	0.110	0.070	0.123
A-level	-0.112	0.122	0.012	0.124
O-levels/GCSEs	-0.078	0.093	0.020	0.098
Housing tenure (reference: social sector rental)				
Outright owner	0.055	-0.110**	-0.066*	-0.121**
Own with mortgage	0.070	-0.064	0.008	-0.062
Private sector rental	0.081	-0.054	0.033	-0.048
Financial forecasts time t (reference category: 'worse')				
'Better'		0.355***		
'Same'		0.196***		
Financial realizations time t (reference category: 'worse')				
'Better'	0.148***	-0.139***	0.013	-0.135***

'Same'	-0.002	-0.065***	-0.078***	-0.076***
Region dummies	*Yes*	*Yes*	*Yes*	*Yes*
Year dummies	*Yes*	*Yes*	*Yes*	*Yes*
N		27,889 (6,897 individuals)		
F test	7.29***	14.02***	8.70***	6.07***

Notes: All regressions are clustered by individual and include year and region of residence dummy variables (coefficients not reported). * indicates significance level (p-value) below 0.10, ** below 0.05 and *** below 0.01.

Table A3: Linear fixed effects log of hourly real wage equation

Dependent variable	Log hourly real wage
Variable	Coefficients
Demographics	
Age	0.080***
Age²/100	-0.107***
Marital status and household composition (reference: single, never married)	
Widowed/divorced/separated	0.056***
Married/cohabiting-partner employed	0.063***
Married/cohabiting-partner not employed	0.079***
Number of dependent children in household	-0.023***
Health (reference: health-other)	
Health-excellent	0.000
Health-good	0.003
Educational attainment (reference: no qualifications)	
University/college degree	0.161***
Vocational college qualification	0.099**
A-level	0.077*
O-levels/GCSEs	-0.004
Labour market characteristics	
Union covered, member	0.072***
Union covered, non-member	0.013
Holding a second job	-0.023**
Job tenure	-0.001
Job tenure²/100	0.008
Manager / supervisor	0.038***
Promotion opportunities available	0.001
Pay includes bonus / profit share	0.028***
Employer provided pension available	0.067***
Pay includes annual rises	0.017***
Shift worker	0.014
Seasonal/agency temping/casual contract	-0.010
Fixed-term contact	-0.012
Flexibility in job location (reference: work at employers' premises)	
Work from home	0.109*
Other work location	0.014
Work needs travelling	0.013
Occupation one digit classification (reference: other)	
Managers and administrators	0.102***
Professional	0.126***
Associate professional and technical	0.076***
Clerical and secretarial	0.043**
Craft and related	0.035*
Personal and protective service	-0.021
Sales	-0.013
Plant and machine operatives	0.028
Employing sector (reference: private firm)	

Civil service	-0.002
Local government	0.045**
Other public	-0.004
Non-profit	0.014
Standard industrial classification (reference: agriculture and fishing)	
Mining and quarrying	0.157***
Manufacturing	0.081**
Electricity, gas and water	0.061
Construction	0.056
Wholesale and retail trade	0.004
Hotels and restaurants	-0.060
Transport, storage and communication	0.046
Financial intermediation	0.046
Real estate and business activities	0.068**
Public administration and defence	0.069**
Education	0.037
Health and social work	-0.010
Social and personal services	-0.006
Private households and extra-territorial organizations	0.081**
Firm size -number of co-workers (reference: ≥ 500)	
1-9	-0.064***
10-24	-0.040***
25-49	-0.036***
50-99	-0.022**
100-199	-0.013
200-499	-0.007
Region dummies	*Yes*
Year dummies	*Yes*
N	32,490 (9,321 individuals)
F Test	41.05***

Note: All regressions are clustered by individual and include year and region of residence dummy variables (coefficients not reported). * indicates significance level (p-value) below 0.10, ** below 0.05 and *** below 0.01.

Table A4: Linear fixed effects job satisfaction equations

Dependent variable	Overall (1)	Pay (2)
Variable	Coefficients	Coefficients
Demographics		
Age	0.012	-0.028
Age²/100	0.023	0.042
Marital status and household composition (reference: single, never married)		
Widowed/divorced/separated	0.050	0.068
Married/cohabiting-partner employed	-0.050	0.100*
Married/cohabiting-partner not employed	-0.032	0.039
Number of dependent children in household	0.044**	0.066***
Educational attainment (reference: no qualifications)		
University	-0.275	-0.006
HND/HNC	-0.378*	-0.121
A-level	-0.221	-0.049
O-levels/GCSEs	-0.243	-0.002
Housing tenure (reference: social sector rental)		
Outright owner	-0.092	-0.055
Own with mortgage	-0.080	-0.011
Private sector rental	-0.077	-0.055
Labour Market Characteristics		
Log of monthly pay	0.223***	0.992***
Hours worked	-0.023***	-0.086***
Hours worked²/100	0.012*	0.078***
Union covered, member	-0.131***	-0.043
Union covered, non-member	-0.025	0.048
Holding a second job	-0.070**	-0.067*
Job tenure	-0.069***	-0.064***
Job tenure²/100	0.211***	0.218***
Manager / supervisor	-0.006	0.006
Promotion opportunities available	0.357***	0.220***
Pay includes bonus / profit share	0.065***	0.080***
Employer provided pension available	0.078**	0.034
Pay includes annual rises	0.133***	0.160***
Shift worker	-0.067	0.040
Seasonal/agency temping/casual contract	-0.168**	0.166**
Fixed-term contact	0.047	0.159**
Flexibility in job location (reference: work at employers' premises)		
Work from home	0.276***	0.340***
Other work location	0.021	-0.027
Work needs travelling	-0.003	-0.050
Occupation one digit classification (reference: other)		
Managers and administrators	0.212***	0.068
Professional	0.229***	0.045
Associate professional and technical	0.302***	0.077

Clerical and secretarial	0.161**	0.120
Craft and related	0.249***	0.091
Personal and protective service	0.162**	0.017
Sales	0.092	0.109
Plant and machine operatives	0.012	-0.067
Employing sector (reference: private firm)		
Civil service	0.015	-0.080
Local government	0.205***	0.220***
Other public	0.184**	0.022
Non-profit	0.178**	0.194*
Standard industrial classification (reference: agriculture and fishing)		
Mining and quarrying	-0.006	-0.129
Manufacturing	-0.070	-0.163
Electricity, gas and water	-0.153	-0.073
Construction	-0.020	-0.162
Wholesale and retail trade	-0.067	-0.216
Hotels and restaurants	0.045	-0.241
Transport, storage and communication	-0.063	-0.284*
Financial intermediation	-0.190	-0.371**
Real estate and business activities	-0.049	-0.320**
Public administration and defence	-0.006	-0.358**
Education	0.134	-0.216
Health and social work	0.088	-0.433***
Social and personal services	-0.011	-0.248
Private households and extra-territorial organizations	-0.204	-0.192
Firm size -number of co-workers (reference: ≥ 500)		
1-9	0.093**	0.066
10-24	0.000	-0.049
25-49	0.021	-0.062
50-99	-0.036	-0.028
100-199	-0.062	0.014
200-499	-0.070*	-0.053
Region dummies	*Yes*	*Yes*
Year dummies	*Yes*	*Yes*
N	32,612 (9,327 individuals)	
F Test	10.35***	14.58***

Note: All regressions are clustered by individual and include year and region of residence dummy variables (coefficients not reported). * indicates significance level (p-value) below 0.10, ** below 0.05 and *** below 0.01.